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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,114	10/04/2005	Joseph B. Kejha	1420P	4083
7590 Zachary T Wobensmith III 7746 101st Court Vero Beach, FL 32967-2871				
EXAMINER				
DOVE, TRACY MAE				
ART UNIT		PAPER NUMBER		
1726				
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07/22/2011		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/552,114

**Applicant(s)**

KEJHA ET AL.

**Examiner**

TRACY DOVE

**Art Unit**

1726

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) 1, 3, 4 and 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 5, 11 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 5/19/11. Claims 1-11 and 13 are pending with claims 1, 3, 4 and 6-10 being withdrawn from consideration. This Action is FINAL, as necessitated by amendment.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites "which compromises", which is indefinite. Furthermore, after "70 to 90%", "mixture" should be deleted.

Claim 11 recites "as described in claims 2,5 inclusive to which  $\text{LiBF}_4$  salt has at least one other lithium salt added to the electrolyte composition in the range of 0.5 M to 1.5 M", which is confusing and unclear. Examiner suggests "as described in claim 2 or claim 5 wherein least one other lithium salt is added to the electrolyte composition in the range of 0.5 M to 1.5 M".

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 5 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Akashi, EP 0724305.

Akashi teaches a gel electrolyte and a lithium secondary cell using the gel electrolyte. The cell includes a positive electrode which may be a lithium/transition metal composite oxide, a negative electrode which may be a carbonaceous material such as graphite and the gel electrolyte (5:8:16). The non-aqueous solvent and the electrolyte salt used for the production of the gel electrolyte may be those generally used for the production of a lithium secondary cell. The solvent may preferably be ethylene carbonate (EC), propylene carbonate (PC),  $\gamma$ -butyl lactone or mixtures thereof. A solvent mixture containing EC and PC in combination is preferred (4:1-12). A molar ratio of a monomer as a repeating unit of the PAN to the non-aqueous solvent is suitably in the range of 5:95 to 30:70 though it varies depending upon kinds of the non-aqueous solvent, the gelling agent and the electrolyte salt used. Note the PAN is not a solvent, but is the polymer of the gel electrolyte. The lithium salt may be in a concentration of 0.4 to 2 M (4:13-17; 31-32). Table 4 teaches the electrolyte salt may be  $\text{LiBF}_4$  and the solvent mixture contains 75% of EC and 25% of PC. See also Tables 1 & 2. Page 2, lines 26-27 discloses  $\text{LiBF}_4$  and  $\text{LiPF}_6$  are conventional electrolyte salts for use in lithium secondary cells. Thus the claims are anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akashi EP 0724305 in view of Yde-Andersen et al. US 6,346,351.

Akashi teaches a gel electrolyte and a lithium secondary cell using the gel electrolyte. The cell includes a positive electrode which may be a lithium/transition metal composite oxide, a negative electrode which may be a carbonaceous material such as graphite and the gel electrolyte (5:8:16). The non-aqueous solvent and the electrolyte salt used for the production of the gel electrolyte may be those generally used for the production of a lithium secondary cell. The solvent may preferably be ethylene carbonate (EC), propylene carbonate (PC),  $\gamma$ -butyl lactone or mixtures thereof. A solvent mixture containing EC and PC in combination is preferred (4:1-12). A molar ratio of a monomer as a repeating unit of the PAN to the non-aqueous solvent is suitably in the range of 5:95 to 30:70 though it varies depending upon kinds of the non-aqueous solvent, the gelling agent and the electrolyte salt used. Note the PAN is not a solvent, but is the polymer of the gel electrolyte. The lithium salt may be in a concentration of 0.4 to 2 M (4:13-17; 31-32). Table 4 teaches the electrolyte salt may be  $\text{LiBF}_4$  and the solvent mixture contains 75% of EC and 25% of PC. See also Tables 1 and 2. Page 2, lines 26-27 discloses  $\text{LiBF}_4$  and  $\text{LiPF}_6$  are conventional electrolyte salts for use in lithium secondary cells.

Akashi does not explicitly teach a combination of  $\text{LiBF}_4$  and another electrolyte salt. However, Yde-Andersen teaches a lithium salt/carbonate electrolyte system for use in a lithium battery. The electrolyte includes a salt mixture and a solvent mixture.

The salt mixture includes 60-90%  $\text{LiBF}_4$  and 10-40%  $\text{LiPF}_6$  (abstract). The salt mixture is present in a total concentration in the range from 0-3M, preferably 0.1-2M, more preferably 0.5-1.5M (4:20-28). Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Yde-Andersen teaches salt compositions containing 60-90%  $\text{LiBF}_4$  and 10-40%  $\text{LiPF}_6$  result in high cyclability, low initial irreversible loss, high compatibility of the borate against the positive electrode and the phosphate contributes to the electrolyte conductivity (2:14-26). One of skill would have been motivated to provide the electrolyte salt composition of Yde-Andersen for the electrolyte salt of Akashi to improve the cyclability, initial irreversible loss, compatibility of the borate against the positive electrode and the electrolyte conductivity, as taught by Yde-Andersen.

### ***Response to Arguments***

Applicant's arguments filed 12/14/10 have been fully considered but they are not persuasive. Applicant argues the present invention does not use a gelled electrolyte. However, a gelled electrolyte is encompassed by the presently claimed invention (claims recite "comprising" language). Thus this argument is not found persuasive.

Applicant argues Yde-Andersen calls for an electrolyte consisting essentially of a salt mixture and a solvent mixture. The salt mixture includes lithium hexafluorophosphate, which is not found in the present applicant's electrolyte. Again, the presently claimed invention recites comprising language and does not exclude a lithium hexafluorophosphate salt. Examiner further points to claim 11 that recites "at

least one other lithium salt added to the electrolyte composition". The salt mixture of Yde-Andersen consists of lithium tetrafluoroborate and lithium hexafluorophosphate.

Applicant further argues Yde-Andersen teaches a solvent mixture of EC and DMC, not EC and PC as required by the claimed invention. However, Yde-Andersen is not applied to teach the claimed solvent mixture of EC and PC. This limitation is taught by Akashi. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Yde-Anderson is applied to teach the salt mixture of present claim 11.

Applicant asserts "the mixtures of Yde-Andersen is not fire resistant, and does not have the specific combinations of Applicant". However, this assertion is not supported and therefore not found persuasive. Applicant asserts "there is not even a remote suggestion that the electrolyte of Yde-Andersen can be substituted for that of Akashi", however, this assertion is not supported. Furthermore, the rejection requires only the electrolyte salt mixture of Yde-Andersen be substituted for the electrolyte salt of Akashi. Examiner has provided reasons why one of skill would have substituted the electrolyte salt of Yde-Andersen for the electrolyte salt of Akashi. The motivation provided has not been addressed by Applicant.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday & Tuesday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 19, 2011

/TRACY DOVE/

Primary Examiner, Art Unit 1726